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# Identifying Gaps in Follow-up Care Among Adults in an Occupational Health Setting: A Retrospective EBP Pilot

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## Author Note

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## Abstract

The ***Aim*** of this Evidence-Based Project (EBP) was to find a gap in care among adults working in a large financial institution who had the presence of elevated blood pressure at an onsite health clinic visit in the previous 3 years. ***Background*:** Screening for elevated blood pressure in an occupational health setting identified adults with one of the most common chronic medical conditions. Additionally, almost one-half of all adults in the United States have hypertension (HTN); a preventable risk factor for strokes and heart disease (Office of the Surgeon General, 2020). This Surgeon General's report revealed that HTN control had plateaued in the United States at approximately 26% for individuals who were affected by HTN. The need is great to uncover reasons why adults in a workplace setting might not be seeking care after screening for HTN (>130/80). The Iowa Model was used to guide this EBP for its ease of application. ***Process Used*:** Adults aged 30 years to 68 years were selected from the electronic health record based on their first presentation of HTN at a clinic visit. Demographic information included age, sex, body mass index (BMI), family history, and medical history of HTN. ***Assessment of Findings*:** Data were analyzed using Excel and Intellectus Statistics to explore relationships among demographic characteristics. Analysis revealed that adults who visited the clinic and had HTN visited their primary care provider; however, some individuals do not receive follow-up care. Common characteristics among those individuals included elevated BMI (> 25), alcohol use, presence of stress, blood pressure medication, and a family history of HTN or cardiovascular disease (CVD). ***Conclusion*:** The findings will be implemented into a template in the Electronic Health Record for employees to follow-up with occupational health or their primary care provider.


*Keywords: hypertension, occupational health care, screening, workplace*

## Identifying a Gap in Follow-up Care in an Occupational Health Setting

Hypertension (HTN) affects half of the population in the United States, with the prevalence increasing as adults age. Risk factors for HTN can be modifiable or non-modifiable, such as family history. According to the Centers for Disease Control (2018), "nearly half a million deaths in 2018 included HTN as a primary or contributing cause," (Centers for Disease Control and Prevention [CDC], 2020, para. 3). Primary Care Providers (PCPs) must therefore screen adults at every encounter for the presence of HTN to prevent long-term sequelae including stroke, heart attacks, and death.

Screening for HTN in an occupational health setting provides a unique opportunity to identify individuals with elevated blood pressure or HTN; people who may otherwise not schedule a yearly appointment to see their PCP. According to *The Surgeon General's Call to Action to Control Hypertension* (U.S. Department of Health and Human Services, 2020), "the prevalence of hypertension has remained stable over the last 20 years, and limited gains have been made in improving hypertension control in the last decade" (p. 12). He further underscored the importance of improving blood pressure management across all health care settings, including community settings. Collaboration across these settings allowed for more opportunities to screen, treat, and educate individuals about this chronic disease.

Due to the COVID-19 pandemic, this Evidence-Based Project (EBP) became a retrospective pilot study conducted remotely with assistance from Amy Kinghorn, Nurse Practitioner (NP) at a large financial institution's onsite occupational health clinic in Southern California. This financial center's staff of over 4,000 employees promotes a culture of wellness. Employees have access to an onsite fitness center, cafeteria with healthy food choices (e.g., calorie count available online), fitness club discounts, onsite massage, meditation, and

acupuncture. Monthly wellness lunch-and-learn seminars were held prior to the COVID-19 pandemic. An onsite occupational health clinic treats employees seeking care for routine screenings and acute medical problems. Chronic medical conditions are not managed in this clinic; however, the providers encourage patients needing further care or medication management to see their outside provider.

In 2020, a chart review by the onsite NP found potentially inadequate follow-up care for those with elevated blood pressure (> 120/80mm hg) or HTN (> 130/80mm hg). An evidence-based practice (EBP) proposal was presented to address the gap in care. To tailor an intervention for these adults, the goal of this proposal was to evaluate relationships among this population of patients and their follow-up as well as any associated demographics.

This EBP aimed to find the gaps in care among individuals identified as having elevated blood pressure or HTN over the prior 3 years. Data were gathered and analyzed. Additionally, a literature review supplied best-practice evidence to support an intervention for improving management of these patients in the future. Furthermore, this EBP aimed to contribute to the most recent evidence-based research and serve as a catalyst for the implementation of an intervention in the future.

## Evidence Appraisal

A comprehensive literature review was done electronically. Database searches included PubMed, Cochrane Databases, MEDLINE, CINAHL, and CDC. Keywords used in the search included *hypertension, elevated blood pressure, screening, occupational health, workplace, treatment, self-care,* and *stress*. Using Melnyk's Hierarchy of Evidence (Melnyk & Fineout-Overholt, 2019), studies were selected on their strength and excluded if their publication date was older than 5 years. Eight articles met criteria for inclusion: two clinical practice guidelines

(CPG), a systematic review, a randomized control trial (RCT), a cohort study, a case study and two expert opinions. Due to the lack of information available on retrospective studies involving gaps of care, the final choice included a CPG from 2003. Finally, each article was critically appraised using the Melnyk's General Appraisal Overview (GAO).

The Cochrane Library Systematic Review by Schmidt et al. (2020) summarized the effectiveness of screening strategies for HTN. After screening 9,000 studies, the authors concluded that none of the titles met criteria for inclusion into the quantitative review. However, they completed the review based on a few studies that addressed similar research questions. They concluded that, although there was a paucity of current evidence to support specific screening strategies, they endorsed the practice of HTN screenings to lessen mortality and morbidity associated with this condition and underscored the importance of adding evidence to the existing body of literature.

In 2017, the American College of Cardiology and American Heart Association Task Force published its CPB on high blood pressure (Whelton et al., 2017). Within these guidelines were evidence-based recommendations to improve screening, treatment, and control of HTN among adults. When making recommendations for improvement of screening, they advised that using electronic health records (EHRs) or registries could "permit large-scale queries to support population health management strategies to identify undiagnosed or undertreated hypertension" (Whelton et al., 2017, p. e73). Utilizing this CPG strengthened the recommendations for future practice.

One of the demographics used in collecting data was the presence of stress in one's life. Working in a financial institution could be considered stressful; therefore, a search of the databases revealed a RCT examining stress management in the workplace. A cohort study by

Legorreta et al. (2015) discussed its applicability to the EBP location and validity of findings. These authors concluded that workplace screenings among insured populations could "help identify a potential problem and provide the impetus for an individual to become engaged with the healthcare system" (p. 684).

The final two articles were expert opinions. In the first one, the Surgeon General's call to action highlighted the importance of collaboration across disciplines to better control HTN and stressed the importance in his call to action (U.S. Department of Health and Human Services, 2020). The second article detailed the HTN control change package (HCP), including guidelines and performance improvement measures for enhancing HTN control in any health care setting (Million Hearts, 2020). HCP was part of the Million Hearts® initiative that aimed "to prevent one million heart attacks and strokes within 5 years. It focused on implementing a small set of evidence-based priorities and targets that can improve cardiovascular health for all" (Million Hearts, 2021, para. 1).

The HCP was a partnership among a national community of providers, health care organizations, and champions that established a benchmark of 80% control for patients with HTN in their practices. Together, they established a taskforce of champions across the nation who provided evidence-based toolkits for use in any setting. This comprehensive toolkit is available online for providers and organizations to implement.

The totality of the reviewed articles overwhelmingly supported the ongoing screening, detection, and treatment of HTN. Established toolkits from the HCP provided the guide to improve HTN management in an occupational health setting.

## PICOT Question

The PICO question for this project was: In an occupational health setting, would the implementation of a HTN protocol result in a 10% improvement in control for adults with HTN within 6 months? Because of COVID-19 barriers in the workplace, this EBP pilot collected pre-implementation data and provides the foundation for implementation once people can safely return to their work setting.

## Benchmark

The HCP described in the Evidence Appraisal section served as the established benchmark: 80% of patients in the occupational health practice should have their HTN within control. All data were compared to this benchmark. Additionally, demographics and comorbidities of the sample were compared to national averages to investigate other relationships among those shown to be a target area for this intervention.

## EBP Model

Highly effective health care systems strive to meet benchmarks. The Iowa Model of Evidence-Based Practice was developed to serve as a guide for nurses to use research findings to help improve patient care (Melnyk & Fineout-Overholt, 2019). This model aligned with identifying issues that were important to the health care organization. Controlling HTN among adults was a priority for the occupational health clinic and the employer. This model also provided feedback loops to guide the decision-making process, allowing the reevaluation of ideas before moving forward in the EBP process.

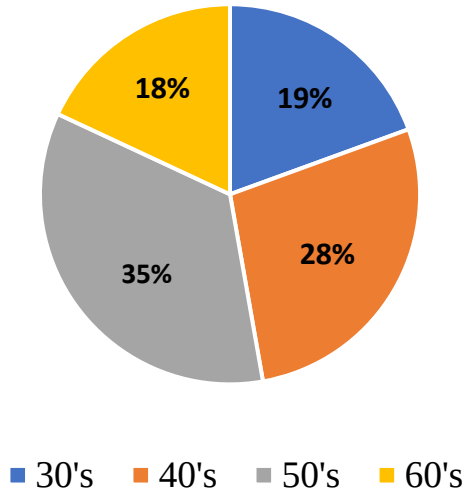
## Data Management

After IRB approval was obtained from USD and a letter of support was given from the clinic site, data were collected by NP Kinghorn from the EHR. The data were de-identified.

Seventy-two patient records were reviewed from visits between 2017 and 2019 to include sufficient sample size for the purposes of this pilot study. The data set included an equal number of males and females ranging in age from 30 years to 68 years, ($M$ = 49.72 years). Data are represented in Figure 1.

**Figure 1**

*Percentage Distribution of Adults with HTN*




Other questions were used to help identify the type of intervention to use. These included the presence of an onsite clinic visit within the last year, elevated BP or stage I HTN, the presence of a second visit within 3-6 months or a follow-up with their PCP, family history of cardiovascular disease (CVD) or HTN, body mass index (BMI) of overweight or higher (≥ 25kg/m$^2$), diagnosed with HTN, use of alcohol (ETOH), ever diagnosed with HTN, presence of stress, history of exercise, history of smoking, and past or present BP medication.

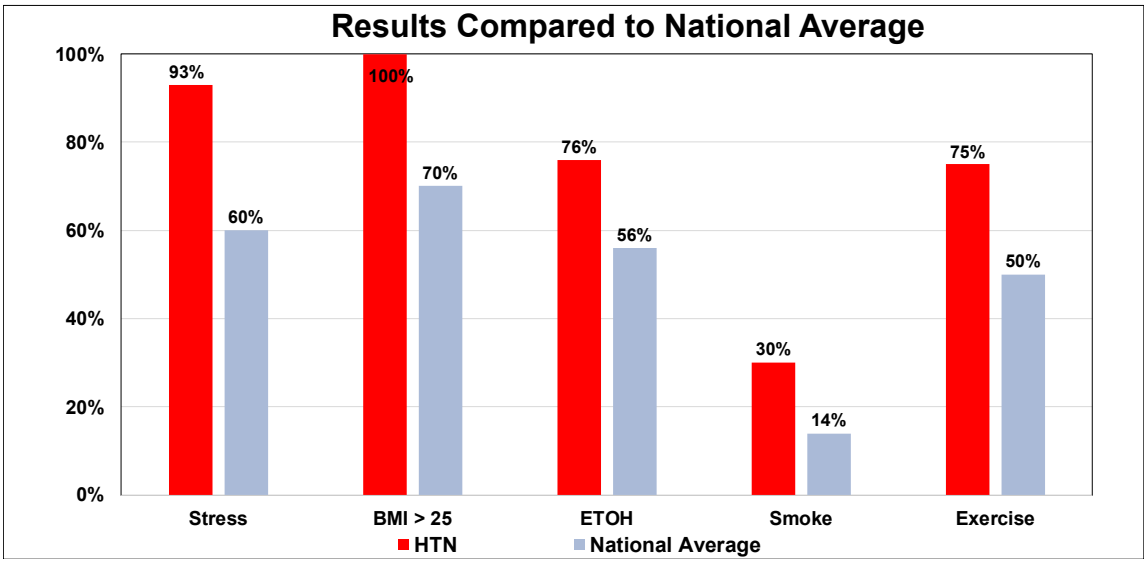
These data were compiled into an Excel spreadsheet. The above variables were aggregated using pivot tables and charts. The tables were useful by supplying numerical relationships among the variables. Additional analysis was done via Intellectus software.

Data analysis revealed that 29 adults had HTN during an in-clinic visit. All 29 people identified with HTN were female and 93% either followed up with their PCP or had a second in-clinic visit within 3 to 6 months after their first appointment. This is higher than the benchmark from the HCP that was used for comparison in the project; however, there were common risk factors and comorbidities among those with HTN.

A breakdown of the hypertensive population ($n$ = 29) included 30% smokers. According to the CDC, the national average is 14%. The percentage of those who smoked in the sample was more than twice the national average. Further, 96% of the sample had a family history of HTN or cardiovascular disease (CVD), and 100% of the sample had a BMI 25 or higher. According to the CDC, the national average of obesity is 70.2%, the sample has a 40% higher rate of obesity. Data is represented in Figure 2.

**Figure 2**

*Common Risk Factors Compared to National Average*



Other modifiable risk factors that were significant included history of ETOH intake (76%), presence of stress (93%), and 100% of those identified with HTN took blood pressure medications.

While 75% of the hypertensive employees exercised, modifiable risk factors could help to improve overall health and prevent complications. Non-modifiable risk factors present among this group included a positive family history of HTN.

These data supplied background information on insured, working adults in a large financial center. However, the demographics of the sample highlighted areas to target interventions to promote the health and well-being of all adults working at the financial center, thus increasing productivity among employees by decreasing time off work due to illness.

## Proposed Evidence-Based Intervention

A proposed intervention for future implementation includes adding an electronic alert in the EHR. If a patient has HTN at an in-clinic visit, a list will auto-populate to include those common demographics found from the data analysis. These include elevated BMI of 25 or higher, stress, smoking, or alcohol use. If any of these variables are present, a follow-up appointment for a recheck of blood pressure would automatically generate an alert in the EHR. This would allow the staff to capture patients who might not otherwise return for a blood pressure check. Further interventions could include a recommendation to seek routine care from their PCP.

An added suggestion would be to engage the patients by inviting them to take part in their wellness. This could include rewards for coming to their clinic appointment and could be in the form of a voucher for a massage. The massage benefit was reported to be a popular event at the facility prior to the COVID pandemic.

## Barriers to Project Implementation

The ideal implementation for this intervention would be as soon as COVID restrictions are lifted by the state and follow-up data collection occurring 3 months later. Barriers to implementation include local COVID restrictions affecting workplace gatherings at this large financial center and employees working remotely.

## Cost Benefit Analysis

The costs associated with implementation of this project are low. Education of staff can be done by an NP student resulting in zero cost to the facility. Additionally, if an information technology (IT) specialist is needed to modify the EHR template, the resultant cost of $100 would allow for 2 hours of EHR template reprogramming. This estimate was calculated from the average salary for an IT professional listed at scholarly.com (n.d.) and varied by location.

A recent study by Kirkland et al. (2018) utilized a national database to estimate the costs of HTN in the United States among adults. They reported the "unadjusted mean annual medical expenditure attributable to patients with hypertension was $9,089" (p. 6). This expenditure averaged $2,000 in increased health care expenses per year than adults without HTN.

Major consequences of uncontrolled HTN include heart attack, stroke, and kidney disease. According to Fair Consumer Health (2020), an organization committed to helping individuals understand health care costs, an insured person could expect approximately $30,000 in out-of-pocket costs for the medical treatment of a heart attack.

The results of the cost benefit analysis reveal that for every dollar spent, there is a potential savings of $3,000. This savings does not consider the variable salaries among employees. The return on investment is 299%, substantiating the cost effectiveness of implementing this project.

## Sustainability

This project is attainable and sustainable. After the EHR has been modified to include a new template, patients visiting the clinic will be flagged for followed-up care. Ancillary staff can then schedule the patients for their next appointment or consult with the provider in the clinic if they need to be seen sooner. The providers will have minimal interruption to their schedule thereby maximizing their productivity.

## Implications for Clinical Practice

Data analysis revealed areas for improvement among the management of adults with HTN. Creating a template within the EHR is one proposed intervention that could allow individuals with these common demographics and risk factors to be followed closely or referred to a primary care provider for further management. Other interventions include the use of established apps on a smart phone or text messaging reminders.

The sample size of this Pilot project included 72 individuals who had the presence of HTN or elevated blood pressure at a clinic visit over the prior 3 years. Although an equal number of males and females were used in the sample, only females ($n$ = 29) were identified as having HTN with other co-morbidities. Conducting this study with a larger sample size post-COVID could reveal a greater understanding of this intervention.

## Conclusions

Uncontrolled HTN is a national health priority. This project highlighted the importance of screening adults at an occupational health clinic. This pilot study found that, while insured adults actively sought care when they had elevated blood pressure at a clinic visit, there were common comorbid conditions present. It would be beneficial to continue this study after implementation of the suggested changes to the EHR template and a larger set of employees.

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